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INDEPENDENT REVIEW/REASSESSMENT

OF

ANOMALOUS DATA

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VOLUME III

Prepared for

U.S. ARMY CONCEPTS ANALYSIS AGENCY
Contract MDA903-86-C-0396

Prepared by

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19. ABSTRACT (Continue on reverse if necessary and identify by block number)
An independent review/reassessment of 61 battles in 8 campaigns of World War II and the Arab-Israeli Wars of 1967 and 1973 was conducted. this work will provide the U.S. Army's Concepts Analysis Agency (CAA) with a factual basis for determining the extent to which certain anomalies in the data contained in CAA Study Report CAA-SR-84-6, "Analysis of Factors That Have Influenced Outcomes of Battles and Wars" are attributable to actual changes in combat dynamics, or whether they are more likely due to flaws in the data base. In virtually every case, the LFW Team's findings differ substantially from those determined by the authors of CAA-SR-84-6. (Keywords: land combat; World War 2; Anzio and Rome campaigns; casualties; military force levels).

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INTRODUCTION AND BIBLIOGRAPHY: ANZIO

As per contract, the LFW Team reviewed/reassessed the following battles:

Aprilla I 25-26 Jan 1944
Campoleone, 29-31 Jan 1944
Carroceto, 7-8 Feb 1944
Moletta River, 7-9 Feb 1944
Factory Counterattack, 11-12 Feb 1944
Fioccia, 21-23 Feb 1944

The basic source for statistical data on the battles of the Anzio campaign were the official records, of which the Fifth Army Periodic Reports were the most valuable source.

For the British 1st Infantry Division, loading tables were used to establish initial strength for Aprilla I and then adjusted for casualties and additions for the next two battles [Campoleone, Carroceto]. Strengths for the 45th Division, which was involved in the next three battles, were established from Fifth Army Periodic Reports and VI Corps and 45th Division situation reports.

"Bloody" casualties were established from the official records and "non-bloody" casualties primarily from Lada and Mellor, as explained in the general introduction.

Bibliography

Official Records

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VI Corps: After-Action Report, Periodic Reports, and G-1 and G-3 Journals.

45th Infantry Division: After-Action Report, Division Artillery After-Action Report, Daily Situation Reports,

Division Artillery Daily Situation Reports, Division Artillery
Journal, and G-1 and G-3 Journals and files; After-Action
Reports, Daily Situation Reports, and S-1 and S-3 Journals and
files of the three organic regiments: 157th Infantry, 179th
Infantry, and 180th Infantry.

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AOK 14, KTB [Fourteenth Army War Diary] and Anlagen
[appendices] [Microfilm Collection T-312, rolls 482 through
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Rivers, 17-31 Jan 1944," by Ralph S. Mavrogordata, 1955; No.
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Vaughan-Thomas, Wynford, Anzio [New York: Holt, Rinehart, and Winston, 1961].

Of peripheral usefulness:

The Fighting Forty-Fifth: The Combat Report of an Infantry Division [Baton Rouge, LA: Army and Navy Publishing Company, 1946].

NOTE: The LFW Team was unable to locate the source listed in the HERO study as: Muhm, Col. Gerhard, "Verluste der HG SUD wahrend der 4, CASSINO-SCHLACHT unter der Schlact um ROM 911.5-2.6.1944]," unpublished study [1983]; but the Team considered that use of the offical German records compensated for lack of access to this study.

US ARMY

LPW MANAGEMENT ASSOCIATES, INC. REVIEW

OF

CAA TASK 4 REQUIREMENTS

LPW'S INDEPENDENT REVIEW/REASSESSMENT OF SIX ANOMALOUS BATTLES

FROM THE ANZIO CAMPAIGN

CAA
CONCEPTS ANALYSIS AGENCY

TJT-4

BRITISH STRENGTH: APRILIA I

Low

High

Nominal

Estimate	23,195
Estimate	24,478
Strength based on start basic and attached units' orgn. strength	23,312*
Replacements	0
RTD	0
Attachments/detachments during battle	0**
LFW estimate	23,312

BASIC SOURCES: *Loading tables in Operations Report, 1st
Infantry Division; **Fifth Army Operations Orders.

CONCEPTS ANALYSIS AGENCY

TTi-5

BRITISH CASUALTIES: APRILLA I

"Bloody"

Low

Estimate 169

High

Estimate 207

Nominal

Reported KIAs and WIAs 188*

"Non-Bloody"

Low

Casualties 64

High

Casualties 78

Nominal

Estimated NBCs 66**

BASIC SOURCES: *VI Corps Situation Reports and Fifth Army Periodic Reports; **January 1944 British daily NBC rate per thousand troops was 1.4145161. This figure multiplied by strength of 23.312 thousands and 2 battle days provides 66 NBC. [Mellor, Casualties and Medical Statistics, p. 241.]

CAA

CONCEPTS ANALYSIS AGENCY

US ARMY

GERMAN STRENGTH: APRILIA I

Low
Estimate 5,400

High
Estimate 6,600

Nominal

Reported strength 6,000
Replacements received during battle 0
RTD 0
Attachments/detachments during battle 0
                              Total   6,000

BASIC SOURCES: Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices.

CAA
CONCEPTS ANALYSIS AGENCY

III-7
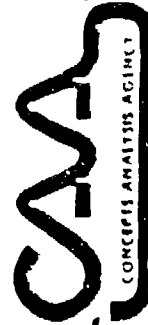
US ARMY

GERMAN CASUALTIES: APRILLA I

"Bloody"

Low
Estimate 35

High
Estimate 43

Nominal
Reported KIAs and WIAs 39*

"Non-Bloody"

Low
Estimate 206

High
Estimate 252

Nominal
Reported POWs 211**
Estimated NBCs from experience of British forces 17***
Total 229

BASIC SOURCES: *Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices; **Fifth Army Periodic Reports; ***British
January 1944 daily NBC rate per thousand troops was 1.4145161.
This figure multiplied by the battle strength [6 thousands] and
2 battle days provides 17 NBC. [Mellor, Casualties and Medical
Statistics, p. 241].

CONCEPTS ANALYSIS AGENCY

III-8

APRILLA I

HERO

A/D	Pers (Total)	Armor			Arty Pcs	Air Sorties	Battle Casualties							
		T	Lt.	MBT			Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	19,350	71	0	71	242	0	1,158	3.0	7	4.9	?	?	0	--
D	6,750	46	0	46	66	28	130	1.0	1	4.3	?	?	0	--

LFW

A/D	Pers (Total)	Armor			Arty Pcs	Air Sorties	Battle Casualties							
		T	Lt.	MBT			Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	23,312	81	0	81	112	?	188	0.4	3	1.9	0	--	?	--
D	6,000	55	30	25	24	?	39	0.3	5	4.5	?	--	?	--

CAA
CONCEPTS ANALYSIS AGENCY

BRITISH STRENGTH: CAMPOLEONE

Low

Estimate 17,856

High

Estimate 21,824

Nominal

Based on start basic and attached units' orgn. strength ... 19,840*
Replacements 0
RTD 0
Attachments/detachments during battle .... + 782**
LFW estimate 20,622

BASIC SOURCES: *Loading tables in Operations Report, 1st Inf
Div; **Fifth Army Operations Orders.

CAA
CONCEPTS ANALYSIS AGENCY

BRITISH CASUALTIES: CAMPOLEONE

"Bloody"

Low

Estimate 151

High

Estimate 185

Nominal

Reported KIAs and WIAs 168*

"Non-Bloody"

Low

Estimate 81

High

Estimate 99

Nominal

Estimate from experience of British forces ... 84**

BASIC SOURCES: *VI Corps Situation Reports and Fifth Army Periodic Reports; **January 1944 British daily NBC rate per thousand troops was 1.4145161. This figure multiplied by battle strength of 19.840 thousands and 3 battle days provides 84 NBC [Mellor, Casualties and Medical Statistics, p. 241].

CONCEPTS ANALYSIS AGENCY

III-11

GERMAN STRENGTH: CAMPOLEONE

Low
Estimate 14,518

High
Estimate 17,744

Nominal

Reported strength	16,131
Replacements received during battle	0
RTD	0
Attachments/detachments during battle	0
Total	16,131

BASIC SOURCES: Fourteenth Army and LXXVI Panzer Corps War Diaries and appendices.

CAA
CONCEPTS ANALYSIS AGENCY

GERMAN CASUALTIES: CAMPOLEONE

"Bloody"

Low

Estimate 140

High

Estimate 171

Nominal

Reported KIAs and WIAs 155*

"Non-Bloody"

Low

Estimate 66

High

Estimate 80

Nominal

Estimated NBCs from experience of British forces 68**

BASIC SOURCES: *Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices; **January 1944 British daily NBC rate
per thousand troops was 1.4145161. This figure multiplied by
a battle strength of 16.131 thousands and 3 battle days provides
68 NBC [Mellor, Casualties and Medical Statistics, p. 241].

CONCEPTS ANALYSIS AGENCY

US ARMY

CAMPOLEONE

HERO

	Strength					Air Sorties	Battle Casualties							
A/D	Pers (Total)	Armor T	Lt.	MBT	Arty Pcs		Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	17,766	71	0	71	242	16	742	1.4	?	--	?	?	0	--
D	15,098	92	0	92	123	30	221	0.5	?	--	?	?	0	--

LFW

	Strength					Air Sorties	Battle Casualties							
A/D	Pers (Total)	Armor T	Lt.	MBT	Arty Pcs		Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	19,840	76	0	76	112	?	168	0.3	6	2.6	0	--	?	--
D	16,131	72	30	42	24	?	155	0.3	1	0.5	2	2.8	?	--

III-14

BRITISH STRENGTH: CARROCETO

Low

Aprilia I preceding battle low strength [23,195] minus high
casualties ["bloody" 207, "non-bloody" 78] 22,910

High

Aprilia I preceding battle high strength [24,478] minus low
casualties ["bloody" 169, "non-bloody" 54] 24,250

Nominal

Aprilia I preceding battle nominal strength [23,312] minus
nominal casualties ["bloody" 188, "non-bloody" 71] 23,053
Replacements received during battle   0
RTD   0
Attachments/detachments during battle [4 tank companies] .. + 720
Total   23,773

BASIC SOURCES: Fifth Army Operations Orders and Periodic Reports.

CONCEPTS ANALYSIS AGENCY

III-15

US ARMY

BRITISH CASUALTIES: CARROCETO

"Bloody"

Low
Estimate 149

High
Estimate 182

Nominal
Reported KIAs and WTAs 165*

"Non-Bloody"

Low
Estimated NBCs 65**

High
Estimate 140

Nominal
Reported NBCs and MIAs 127*

BASIC SOURCES: *VI Corps Situation Reports and Fifth Army Periodic Reports; **January 1944 British daily NBC rate per thousand troops was 1.4145161. This figure multiplied by a battle strength of 23.053 thousands and 2 battle days provides 65 NBC [Mellor, Casualties and Medical Statistics, p. 241].

CONCEPTS ANALYSIS AGENCY

III-16

US ARMY

GERMAN STRENGTH: CARROCETO

Low

Estimate 21,400

High

Estimate 26,156

Nominal

Reported strength 23,778
Replacements received during battle   0
RTD   0
Attachments/detachments during battle   0
                                          Total   ‾23,778‾

BASIC SOURCES: Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices.

CONCEPTS ANALYSIS AGENCY

III-17

GERMAN CASUALTIES: CARROCETO

"Bloody"

Low Estimate	324
High Estimate	396
Nominal Reported KIAs and WIAs	360*

"Non-Bloody"

Low Estimated NBCs	65
High Estimate	79
Nominal Estimate from experience of British forces	67**

BASIC SOURCES: *Fourteenth Army and LXXVI Panzer Corps War Diaries and appendices; **February 1944 British daily NBC rate per thousand troops was 1.4145161. This figure multiplied by a battle strength of 23.778 thousands and 2 battle days provides 67 NBC [Mellor, Casualties and Medical Statistics, p. 241).

CAA
CONCEPTS ANALYSIS AGENCY

CARROCETO

HERO

A/D	Strength						Battle Casualties							
	Pers (Total)	Armor			Arty Pcs	Air Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	26,490	107	0	107	221	18	341	0.6	?	--	?	--	?	--
D	4,515	139	0	139	82	7	369	4.1	?	--	?	--	?	--

LFW

A/D	Strength						Battle Casualties							
	Pers (Total)	Armor			Arty Pcs	Air Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	23,778	163	0	163	112	?	360	0.8	5	1.5	?	?	?	--
D	23,053	132	0	132	74	?	165	0.2	7	2.7	0	?	?	--

CAA
CONCEPTS ANALYSIS AGENCY

III-19

U.S. STRENGTH: MOLETTA RIVER

Low

Estimate 6,930

High

Estimate 8,470

Nominal

157th RCT [5,000] and attached units' [2,700] strength 7,700
Replacements received during battle 126
RTD 109
Attachments/detachments during battle 0
                                                        _____
                                          Total   7,935

BASIC SOURCES: 45th Infantry Division after-action report,
situation reports, and operations orders.

CAA
CONCEPTS ANALYSIS AGENCY

III-20

US ARMY

U.S. CASUALTIES: MOLETTA RIVER

"Bloody"

Low Estimate 24

High Estimate 30

Nominal
Reported KIAs [5] and WIAs [22] 27

"Non-Bloody"

Low Estimate 116

High Estimate 142

Nominal
Reported MIA [1] and NBC [128] 129

BASIC SOURCE   45th Infantry Division after-action report, G-1/AG Section.

CAA
CONCEPTS ANALYSIS AGENCY

III-21

US ARMY

GERMAN STRENGTH: MOLETTA RIVER

Low

Estimate 5,850

High

Estimate 7,150

Nominal

Reported strength 6,500
Replacements received during battle 0
RTD 0
Attachments/detachments during battle ... 0

Total   6,500

BASIC SOURCES: Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices.

TTI-22

CONCEPTS ANALYSIS AGENCY

GERMAN CASUALTIES: MOLETTA RIVER

"Bloody"

Low Estimate	57
High Estimate	69
Nominal Reported KIAs and WIAs	63*

"Non-Bloody"

Low Estimate	26
High Estimate	32
Nominal Estimate from experience of British forces	28**

BASIC SOURCES: *Fourteenth Army and LXXVI Panzer Corps War Diaries and appendices; **February 1944 British daily NBC rate per thousand troops was 1,415161 . This figure multiplied by a battle strength of 6.5 thousands and 3 battle days provides 28 NBC [Mellor, Casualties and Medical Statistics, p. 241].

CONCEPTS ANALYSIS AGENCY

III-23

US ARMY

MOLETTA RIVER

HERO

A/D	Strength						Battle Casualties							
	Pers (Total)	Armor			Arty Pcs	Air Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	7,418	27	0	27	58	9	167	1.1	?	--	?	--	?	--
D	5,000	0	0	0	76	7	107	1.1	?	--	?	--	?	--

LFW

A/D	Strength						Battle Casualties							
	Pers (Total)	Armor			Arty Pcs	Air Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	6,500	24	24	0	36	?	63	0.3	?	--	?	--	?	--
D	7,700	17	0	17	52	?	27	0.1	0	--	0	--	?	--

CONCEPTS ANALYSIS AGENCY

III-24

U.S. STRENGTH: FACTORY COUNTERATTACK

Low

Estimate 5,805

High

Estimate 7,095

Nominal

179th RCT [5,000] plus attached units' orgn. strength
[1,450] 6,450
Replacements received during battle 0
RTD 14
Attachments/detachments during battle 0
                                                   ⎯⎯⎯⎯⎯
                               Total   6,464

BASIC SOURCES: 45th Infantry Division after-action report,
G-1/AG Section, and operations orders.

CAA
CONCEPTS ANALYSIS AGENCY

III-25

U.S. CASUALTIES: FACTORY COUNTERATTACK

"Bloody"

Low
Estimate 55

High
Estimate 67

Nominal
Reported KIAs [7] and WIAs [54] 61

"Non-Bloody"

Low
Estimate 62

High
Estimate 64

Nominal
Reported NBC 58

BASIC SOURCE: 45th Infantry Division after-action report, G-1/AG Section.

CONCEPTS ANALYSIS AGENCY

III-26

US ARMY

GERMAN STRENGTH: FACTORY COUNTERATTACK

Estimate .... Low	6,570
Estimate .... High	8,030
Nominal	
Reported strength	7,300
Replacements received during battle	0
RTD	0
Attachments/detachments during battle	0
Total	7,300

BASIC SOURCES: Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices.

CONCEPTS ANALYSIS AGENCY

III-27

US ARMY

GERMAN CASUALTIES: FACTORY COUNTERATTACK

"Bloody"

Low Estimate	158
High Estimate	193
Nominal Reported KIAs and WIAs	175*

"Non-Bloody"

Low Estimate	55
High Estimate	67
Nominal Reported POWs 45th US Inf Div to Fifth Army	39**
Estimated NBCs from experience of British forces	21***
Total	61

BASIC SOURCE: *Fourteenth Army and LXXVI Panzer Corps War Diaries and appendices; **Fifth Army Periodic Reports; ***February 1944 British daily NBC rate per thousand troops was 1.4145161. This figure multiplied by battle strength of 7.3 thousands and 2 battle days provides 21 NBC [Mellor, Casualties and Medical Statistics, p. 241.].

III-28

CAA

CONCEPTS ANALYSIS AGENCY

US ARMY

FACTORY COUNTERATTACK

HERO

A/D	Strength					Air Sorties	Battle Casualties							
	Pers (Total)	Armor			Arty Pcs		Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	13,400	70	0	70	155	7	101	0.8	?	--	?	--	0	--
D	7,077	28	0	28	102	0	206	2.9	?	--	?	--	0	--

LFW

A/D	Strength					Air Sorties	Battle Casualties							
	Pers (Total)	Armor			Arty Pcs		Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	6,450	70	0	70	155	?	61	0.5	8	5.7	?	--	?	--
D	7,300	17	0	17	48	?	175	1.2	2	5.9	0	--	?	--

TTI-29

CONCEPTS ANALYSIS AGENCY

U.S. STRENGTH: FIOCCIA

Low

Estimate 16,721

High

Estimate 18,481

Nominal

Estimated strength [15,601] plus attached British units [2,000] 17,601*
Replacements during battle 751**
RTD 230**
Attachments/detachments during battle 0

Total   18,582

BASIC SOURCES: *TO&E Strength and 45th Infantry Division operations orders; **45th Infantry Division after-action report, G-1/AG Section.

CONCEPTS ANALYSIS AGENCY

U.S. CASUALTIES: FIOCCIA

"Bloody"

Low
Estimate 234

High
Estimate 286

Nominal
Reported KIAs [32] and WIAs [228] 260

"Non-Bloody"

Low
Estimate 944

High
Estimate 1,154

Nominal
Reported NBC 480
Reported MIA 569
Total 1,049

BASIC SOURCES: 45th Infantry Division after-action report,
G-1/AG Section; Fifth Army Periodic Reports.

US ARMY

GERMAN STRENGTH: FIOCCIA

Low

Estimate 7,200

High

Estimate 8,800

Nominal

Reported strength 8,000
Replacements during battle 0
RTD 0
Attachments/detachments during battle 0

Total 8,000

BASIC SOURCES: Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices.

CAA
CONCEPTS ANALYSIS AGENCY

III-32

GERMAN CASUALTIES: FIOCCIA

"Bloody"

Low

Estimate 113

High

Estimate 139

Nominal

Reported KIAs and WIAs 126*

"Non-Bloody"

Low

Estimate 32

High

Estimate 40

Nominal

Estimate from experience of British forces 34**

BASIC SOURCES: *Fourteenth Army and LXXVI Panzer Corps War
Diaries and appendices; **February 1944 British daily NBC
rate per thousand troops was 1.4145161. This figure multiplied
by a battle strength of 8.0 thousands and 3 battle days provides
34 NBC [Mellor, Casualties and Medical Statistics, P. 241].

CAA
CONCEPTS ANALYSIS AGENCY

JJT-33

FIOCCIA

HERO

	Strength						Battle Casualties							
	Pers	Armor			Arty	Air			Armor		Arty		A/C	
A/D	(Total)	T	Lt.	MBT	Pcs	Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	15,037	45	0	45	164	170	255	0.6	?	--	?	--	?	--
D	19,613	106	17	89	1187	178	403	0.7	?	--	?	--	?	--

LFW

	Strength						Battle Casualties							
	Pers	Armor			Arty	Air			Armor		Arty		A/C	
A/D	(Total)	T	Lt.	MBT	Pcs	Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	8,000	45	0	45	48	?	126	0.5	?	--	?	--	?	--
D	17,601	70	34	36	187	?	260	0.5	0	--	0	--	?	--

III-34

INTRODUCTION AND BIBLIOGRAPHY: ROME

As per contract, the LFW Team reviewed/reassessed the
following battles:

Moletta Offensive, 23-24 May 1944
Anzio-Albano Road, 23-24 May 1944
Velletri, 26 May 1944
Campoleone Station, 25-28 May 1944
Villa Crocetta, 27-28 May 1944
Lanuvio, 29 May-1 June 1944
Via Anziate, 1-2 Jun 1944

The basic source for statistical data on the battles
of the Rome campaign were the official records, of which the
Fifth Army Periodic Reports were the most valuable source,
both for opening strengths and for "bloody" casualties,
including the British divisions. VI Corps Periodic Reports
and division records, particularly daily situation reports,
were of value for the two American divisions, and some figures
were obtained from the official history, Fisher, Cassino to
the Alps, in particular opening strength of the 1st Armored
Division. "Non-bloody" casualties were derived primarily from
extrapolation of data in Lada and Mellot, as explained in the
general introduction.

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G-1 and G-3 Journals.

1st Armored Division: After-Action Report, Division
Artillery After-Action Report, Daily Situation Reports,
Division Artillery Daily Situation Reports, Division Artillery

Journal and G-1 and G-3 Journals and files; and After-Action Reports, Daily Situation Reports, and S-1 and S-3 Journals and files of the two principal combat commands, A and B.

34th Infantry Division: After-Action Report, Division Artillery After-Action Report, Daily Situation Reports, Division Artillery Daily Situation Reports, Division Artillery Journal, and G-1 and G-3 Journals and files; After-Action reports, Daily Situation Reports, and S-1 and S-3 Journals and files of the three organic regiments: 133d Infantry, 135th Infantry, and 168th Infantry.

45th Infantry Division: After-Action Report, Division Artillery After-Action Report, Daily Situation Reports, Division Artillery Daily Situation Reports, Division Artillery Journal and G-1 and G-3 Journals and files; After-Action Reports, Daily Situation Reports, and S-2 and S-3 Journals and files of the three organic regiments: 157th Infantry, 179th Infantry, and 180th Infantry.

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US ARMY

LFW MANAGEMENT ASSOCIATES, INC. REVIEW

OF

CAA TASK 5 REQUIREMENTS

LFW'S INDEPENDENT REVIEW/REASSESSMENT OF EIGHT ANOMALOUS BATTLES

FROM THE ROME CAMPAIGN

CAA
CONCEPTS ANALYSIS AGENCY

III-39

US ARMY

BRITISH STRENGTH: MOLETTA OFFENSIVE

Low

British 5th Div low estimated strength 9,000

High

British 5th Div high estimated strength 11,000

Nominal

LFW Team's estimate	10,400
Replacements received during battle	0
RTD	460
Attachments/Detachments during battle	0
Total	10,860

BASIC SOURCES: Operations Report, 5th Inf Div; strength reports in
records of 15th Army Group, Hq, Allied Armies in Italy. Because of low
effective strength, the division was placed in a holding role on 24 April.

III-40

BRITISH CASUALTIES: MOLETTA OFFENSIVE

"Bloody"

Low

Estimated casualties 212

High

Estimated casualties 234

Nominal

Estimated casualties [KIA 57, WIA 166] 223*

"Non-Bloody"

Low

Casualties 77

High

Casualties 85

Nominal

Casualties [MIA 32, POW 23]* plus 26 NBC** 81

BASIC SOURCES: *Division reports to VI Corps found in Fifth
Army Periodic Reports; and **Mellor, Casualties and Medical
Statistics, p. 241.

III-41

GERMAN STRENGTH: MOLETTA OFFENSIVE

Low

German 4th Parachute Div estimated low strength 8,200

High

German 4th Parachute Div estimated high strength 8,900

Nominal

LFW Team's estimate 8,600

Replacements received during battle 0

RTD 0

Attachments/Detachments during battle 0

Total 8,600

BASIC SOURCES: Fourteenth Army War Diary and appendices. The 4th Parachute Division was seriously understrength.

CAA

CONCEPTS ANALYSIS AGENCY

GERMAN CASUALTIES: MOLETTA OFFENSIVE

"Bloody"

Low

Estimated casualties 57

High

Estimated casualties 69

Nominal

Estimated casualties* 63

"Non-Bloody"

Low

Estimate 13

High

Estimate 15

Nominal

Estimated casualties NBC based on British experience** .. 14

BASIC SOURCES: *Fourteenth Army War Diary and appendices; and
**Mellor, Casualties and Medical Statistics, P. 241.

CAA
CONCEPTS ANALYSIS AGENCY

III-43

MOLETTA OFFINSIVE

HERO

	Strength					Air Sortles	Battle Casualties							
	Pers (Total)	Armor			Arty Pcs		Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A/D		T	Lt.	MBT										
A	17,345	35	0	35	100	16	234	0.7	?	--	?	--	?	--
D	12,569	0	0	0	92	0	468	1.9	0	--	?	--	0	--

LFW

	Strength					Air Sortles	Battle Casualties							
	Pers (Total)	Armor			Arty Pcs		Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A/D		T	Lt.	MBT										
A	10,400	54	0	54	96	?	223	1.1	1	0.9	0	--	?	--
D	8,600	0	24	0	72	?	63	0.4	0	--	?	--	?	--

CONCEPTS ANALYSIS AGENCY

MOLETTA OFFENSIVE

HERO

A/D	Def Posture	Terrain	Weather	Season	Surprise	Supriser	Surprise Level	Air Sup
A								
D	FU	FM	WLT	SpT	N	-	-	x

LFW

A/D	Def Posture	Terrain	Weather	Season	Surprise	Supriser	Surprise Level	Air Sup
A								
D	PD	FM	WLT	SpT	N	-	-	x

The Germans were not in a fortified position (FD) but in a prepared defense (PD).

CONCEPTS ANALYSIS AGENCY
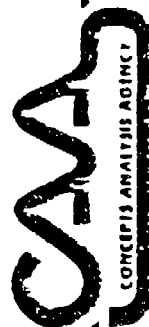
US ARMY

ANZIO-ALBANO ROAD

HERO

A/D	Dates	Campaign	Forces	Commanders	Days	Width of Front (Km)
A	23-24 May 44	Rome	Br 1st Inf Div(+)	MG Penney	2	6.0
D			Gr 65th Inf Div	MG Ziehlberg		

LFW

A/D	Dates	Campaign	Forces	Commanders	Days	Width of Front (Km)
A	23-24 May 44	Rome	Br 1st Inf Div (+)	Brigadier Loewen	2	6.0
D			Gr 65th Inf Div	MG Ziehlberg		

General Loewen had succeeded General Penney as British commander.

III-46

BRITISH STRENGTH: ANZIO-ALBANO ROAD

Low

British 1st Div low estimated strength 8,290

High

British 1st Div high estimated strength 10,120

Nominal

LFW Team's estimate 9,200*
Replacements received during battle 0
RTD 265**
Attachments/Detachments during battle 0

Total 9,465

BASIC SOURCES: *Operations Report, 5th Inf Div; strength reports in records of 15th Army Group, Hq, Allied Armies in Italy; and ** Mellor, Casualties and Medical Statistics.

CONCEPTS ANALYSIS AGENCY

US ARMY

BRITISH CASUALTIES: ANZIO-ALBANO ROAD

"Bloody"

Low

Estimated casualties 141

High

Estimated casualties 155

Nominal

Estimated casualties [KIA 57, WIA 165] 148*

"Non-Bloody"

Low

Casualties 56

High

Casualties 62

Nominal

Casualties [MIA 21, POW 15]* plus 23 NBC** .. 59

BASIC SOURCES: *Division reports to VI Corps found in Fifth
Army Periodic Reports; and **Mellor, Casualties and Medical
Statistics, p. 241.

CAA
CONCEPTS ANALYSIS AGENCY

III-48

GERMAN STRENGTH: ANZIO-ALBANO ROAD

Low

German 4th Parachute Div estimated strength   8,800

High

German 4th Parachute Div estimated strength   9,500

Nominal

LFW Team's estimate   9,000
Replacements received during battle   0
RTD   0
Attachments/Detachments during battle   0
                                                        ————
                                      Total   9,000

BASIC SOURCES: Fourteenth Army War Diary and appendices; MS No. R-50
(Bailey).

CONCEPTS ANALYSIS AGENCY

III-49

US ARMY

GERMAN CASUALTIES: ANZIO-ALBANO ROAD

"Bloody"

Estimated casualties .... Low ... 88

Estimated casualties .... High ... 110

Estimated casualties .... Nominal ... 99

"Non-Bloody"

Estimate .... Low ... 17

Estimate .... High ... 21

Estimate (11 NBC plus 8 MIA)................................. Nominal ... 19

BASIC SOURCE: Fourteenth Army War Diary and appendices;
MS No. 50 (Bailey).

III-50

ANZIO-ALBANO ROAD

HERO

A/D	Strength Pers (Total)	Armor T	Lt.	MBT	Arty Pcs	Air Sorties	Battle Casualties Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	17,313	36	0	36	100	35	194	0.6	?	--	?	--	?	--
D	11,343	19	0	19	96	0	107	0.5	?	--	?	--	?	--

LFW

A/D	Strength Pers (Total)	Armor T	Lt.	MBT	Arty Pcs	Air Sorties	Battle Casualties Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	9,200	64	0	64	96	?	143	0.8	?	5.5	0	--	?	--
D	9,000	7	0	7	72	?	99	0.6	?	--	?	--	?	--
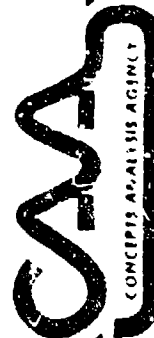
ANZIO-ALBANO ROAD

HERO

A/D	Def Posture	Terrain	Weather	Season	Surprise	Surpiser	Supriser	Level Air Sup
A								
D	FD	FM	WLT	SpT	N	-	-	x

LFW

A/D	Def Posture	Terrain	Weather	Season	Surprise	Surpiser	Supriser	Level Air Sup
A								
D	PD	FM	WLT	SpT	N	-	-	x

The defenders were not in a fortified defense (FD) but a prepared defense (PD).

CONCEPTS ANALYSIS AGENCY

U.S. STRENGTH: VELLETRI

Low

Estimated US 1st Armd Div strength 18,000

High

Estimated US 1st Armd Div strength 18,650

Nominal

LFW Team's estimate (14,620) minus TF Howze (2,200) plus
attached units (6,000)............................ 18,420
Replacements received during battle   0
RTD   0
Attachments/Detachments during battle   0
                                                        _____
                                          Total   18,420

BASIC SOURCES: 1st Armd Div Daily Situation Reports; Fisher,
Cassino to the Alps, (U.S. official history).

CONCEPTS ANALYSIS AGENCY

III-53

U.S. CASUALTIES: VELLETRI

"Bloody"

Low

Estimated casualties 27

High

Estimated casualties 33

Nominal

Casualties from VI corps Daily Situation Report 30*

"Non-Bloody"

Low

Casualties 52

High

Casualties 64

Nominal

Casualties [MIA 16]* from VI Corps Daily Situation Report, plus 42 NBC** 58

BASIC SOURCES: *1st Armored Division and VI Corps Daily Situation Reports; and **Lada, Medical Statistics World War II, p. 27.

CAA — CONCEPTS ANALYSIS AGENCY

US ARMY

GERMAN STRENGTH: VELLETRI

Low

Estimated strength 7,700

High

Estimated strength 8,500

Nominal

LFW Team's estimate 8,100
Replacements received during battle   0
RTD   0
Attachments/Detachments during battle   0
                                                            _____
                                             Total   8,100

BASIC SOURCES: Fourteenth Army War Diary and appendices;
MS. No. R-50 (Bailey).

III-55

US ARMY

GERMAN CASUALTIES: VELLETRI

"Bloody"

Low

Estimated casualties 350

High

Estimated casualties 450

Nominal

Casualties [KIA 100, WIA 300] 400*

"Non-Bloody"

Low

Casualties 271

High

Casualties 331

Nominal

Casualties [MIA 294* plus 7 NBC**] 301

BASIC SOURCES: *Fourteenth Army War Diary and appendices;
MS No. R-50 [Bailey]; and **Mellor, Casualties and Medical
Statistics, p. 241.

CAA
CONCEPTS ANALYSIS AGENCY

US ARMY

VELLETRI

HERO

A/D	Pers (Total)	Strength Armor			Arty Pcs	Air Sorties	Battle Casualties Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	20,683	462	158	304	92	8	767	3.7	18	3.9	?	--	?	--
D	12,327	65	0	65	64	0	1,319	10.7	?	--	?	--	0	--

LFW

A/D	Pers (Total)	Strength Armor			Arty Pcs	Air Sorties	Battle Casualties Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT										
A	18,420	321	221	100	96	?	30	0.2	8	2.5	?	--	?	--
D	8,100	110	45	65	38	?	400	4.9	14	6.1	2	5.3	?	--

VELLETRI

HERO

A/D	Def Posture	Terrain	Weather	Season	Surprise	Surpriser	Surprise Level	Air Sup
A		RM	DST	SpT	Y	- x	- minor	x
D	FD							

LFM

A/D	Def Posture	Terrain	Weather	Season	Surprise	Surpriser	Surprise Level	Air Sup
A		RM	DST	SpT	N	-	-	x
D	HD							

The defenders were not in a fortified defense (FD) but a hasty defense (HD).

CAA

CONCEPTS ANALYSIS AGENCY

III-58

US ARMY

U.S. STRENGTH: CAMPOLEONE STATION

Low

Estimated strength 16,800

High

Estimated strength 18,000

Nominal

LFW Team's estimate 45th Div (14,000) plus TF Howze (2,000)
  plus attached units (1,400).................... 17,400
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0
                                           Total   17,400

BASIC SOURCES: 45th Div Daily Situation Reports and Fisher,
Cassino to the Alps.

CONCEPTS ANALYSIS AGENCY

III-59

U.S. CASUALTIES: CAMPOLEONE STATION

"Bloody"

Low

Estimated casualties (30 KIA, 169 WIA) based on corps report 167

High

Estimated casualties 231

Nominal

Casualties (30 KIA, 169 WIA) per VI Corps Daily Situation Report 199

"Non-Bloody"

Low

Estimated casualties 357

High

Estimated casualties 437

Nominal

Casualties (MIA 228, POW 39) per VI Corps Daily Situation Report (plus 118 NBC)* 397

BASIC SOURCES: VI Corps Daily Situation Reports; and *Lada, Medical Statistics World War II, p. 27.

III-60

CONCEPTS ANALYSIS AGENCY

US ARMY

GERMAN STRENGTH: CAMPOLEONE STATION

Low

Strengths of German units 8,760

High

Estimated high strength 9,100

Nominal

LFW Team's estimate 8,930
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0
                                            ─────
                               Total   8,930

BASIC SOURCES: Fourteenth Army War Diary and appendices.

CAA
CONCEPTS ANALYSIS AGENCY

III-61

US ARMY

GERMAN CASUALTIES: CAMPOLEONE STATION

"Bloody"

Low

Estimated casualties 273

High

Estimated casualties 425

Nominal

Casualties (KIA 118, WIA 230) 348

"Non-Bloody"

Low

Casualties 306

High

Casualties 374

Nominal

Casualties (MIA 276 plus 64 NBC)* 340

BASIC SOURCES: Fourteenth Army War Diary and appendices; and
*Mellor, Casualties and Medical Statistics, p. 241.

CAA
CONCEPTS ANALYSIS AGENCY

CAMPOLEONE STATION

HERO

A/D	Pers (Total)	Strength — Armor T	Lt.	MBT	Arty Pcs	Air Sorties		Battle Casualties — Pers	S/D	Armor	S/D	Arty	S/D	A/C	S/D
A	19,047	102	13	89	97	0		517	0.9	?	--	1	0.3	7	--
D	10,593	19	0	19	106	0		580	1.8	?	--	?	--	0	--

LFM

A/D	Pers (Total)	Strength — Armor T	Lt.	MBT	Arty Pcs	Air Sorties		Battle Casualties — Pers	S/D	Armor	S/D	Arty	S/D	A/C	S/D
A	17,400	108	34	74	86	?		199	0.4	0	--	?	--	?	--
D	8,930	7	0	0	72	?		343	1.3	0	--	0	--	?	--

CAA

CONCEPTS ANALYSIS AGENCY

US ARMY

U.S. STRENGTH: VILLA CROCETTA

Low

Estimated strength 16,000

High

Estimated strength 17,500

Nominal

LFW Team's estimate 16,400
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0
                                                            ───────
                                              Total   16,400

BASIC SOURCES: 34th Inf Div and VI Corps Daily Situation
Reports.

III-64

US ARMY

U.S. CASUALTIES: VILLA CROCETTA

"Bloody"

Estimated casualties ...... Low 150

Estimated casualties ...... High 250

Estimated ...... Nominal 200

"Non-Bloody"

Casualties ...... Low 128

Casualties ...... High 156

Casualties (MIA 57, POW 9, 76 NBC) ...... Nominal 142

BASIC SOURCES: VI Corps G-1 Daily Situation Reports.

CAA
CONCEPTS ANALYSIS AGENCY

III-65

US ARMY

GERMAN STRENGTH: VILLA CROCETTA

Low

Estimated low strength 11,000

High

Estimated high strength 12,500

Nominal

LFW Team's estimate 11,200
Replacements received during battle   0
RTD   0
Attachments/Detachments during battle   0
                                                   _____
                                          Total   11,200

BASIC SOURCES: Fourteenth Army War Diary and appendices.

CONCEPTS ANALYSIS AGENCY

III-66

US ARMY

GERMAN CASUALTIES: VILLA CROCETTA

"Bloody"

Low

Estimated casualties 150

High

Estimated casualties 300

Nominal

Estimated Casualties (KIA 81 plus WIA 100) 181

"Non-Bloody"

Low

Casualties 216

High

Casualties 264

Nominal

Casualties (MIA 114, POW 18, NBC 104) 240

BASIC SOURCES: Fourteenth Army War Diary and appendices.

CAA
CONCEPTS ANALYSIS AGENCY

III-67

VILLA CROCETTA

HERO

	Strength					Air Sorties	Battle Casualties							
	Pers (Total)	Armor			Arty Pcs		Pers		Armor		Arty		A/C	
A/D		T	Lt.	MBT			Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	18,000	102	13	89	93	0	263	0.7	?	--	?	--	?	--
D	13,715	71	0	71	117	0	598	2.2	?	--	?	--	?	--

LFW

	Strength					Air Sorties	Battle Casualties							
	Pers (Total)	Armor			Arty Pcs		Pers		Armor		Arty		A/C	
A/D		T	Lt.	MBT			Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	16,400	108	34	74	93	?	200	0.6	?	--	?	--	?	--
D	11,200	8	8	0	68	?	181	0.8	?	--	?	--	?	--

CONCEPTS ANALYSIS AGENCY

III-68

US ARMY

FOSSO di CAMPOLEONE

HERO

A/D	Dates	Campaign	Forces	Commanders	Days	Width of Front (Km)
A	29-31 May 44	Rome	US 1st Armd Div & US 45th Inf Div (+)	MG Harmon	3	11.0
D			Gr 3d PG Div (½) (+)	MG Baade		

LFW

A/D	Dates	Campaign	Forces	Commanders	Days	Width of Front (Km)
A	29-31 May 44	Rome	US 1st Armd Div & US 45th Inf Div (+)	MG Harmon MG Eagles	3	11.0
D			Gr 3d Pz Gr Div (½) (+)	MG Baade		

Since the 45th Inf Div was not under the command of the 1st Armd Div, the division commander, General Eagles, should be listed.

III-69

US ARMY

U.S. STRENGTH: FOSSO di CAMPOLEONE

Low

Estimated low strength 28,141

High

Estimated high strength 32,831

Nominal

LFW Team's estimate 31,268
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0

Total   31,268

BASIC SOURCES: VI Corps Daily Situation Reports.

III-70

US ARMY

U.S. CASUALTIES: FOSSO di CAMPOLEONE

"Bloody"
Low

Estimated low casualties 835

High

Estimated high casualties 1,535

Nominal

Estimated Casualties 1,315

"Non-Bloody"
Low

Casualties 192

High

Casualties 234

Nominal

Casualties (MIA 114, POW 18, NBC 104) 213

BASIC SOURCES: VI Corps Daily Situation Reports and NBC from Lada, Medical Statistics World War II, p. 27

CAA CONCEPTS ANALYSIS AGENCY

US ARMY

GERMAN STRENGTH: FOSSO di CAMPOLECNE

Low

Estimated low strength 9,000

High

Estimated high strength 11,000

Nominal

LFW Team's estimate 10,000
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0
                                          Total 10,000

BASIC SOURCES: Fourteenth Army War Diary and appendices.

CAA
CONCEPTS ANALYSIS AGENCY

III-72

GERMAN CASUALTIES: FOSSO di CAMPOLEONE

"Bloody"

Low

Estimated casualties 800

High

Estimated casualties 890

Nominal

Estimated Casualties 810

"Non-Bloody"

Low

Casualties 250

High

Casualties 350

Nominal

Casualties (MIA 65, NBC 200)............................ 265

BASIC SOURCES: Fourteenth Army War Diary and appendices.

CONCEPTS ANALYSIS AGENCY

FOSSO di CAMPOLEONE

HERO

A/D	Strength						Battle Casualties							
	Pers (Total)	Armor T	Lt.	MBT	Arty Pcs	Air Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	29,791	781	77	204	146	35	1,304	1.5	80	9.5	1	0.2	?	--
D	15,801	100	0	100	117	11	1,379	2.9	?	--	?	--	?	--

LFM

A/D	Strength						Battle Casualties							
	Pers (Total)	Armor T	Lt.	MBT	Arty Pcs	Air Sorties	Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	31,268	429	255	174	134	?	1,315	1.4	71	5.5	?	--	?	--
D	10,000	?	?	?	34	?	810	2.7	?	?	3	2.9	?	--
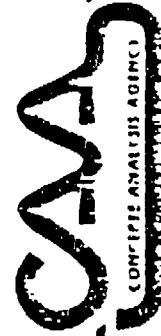
III-74

U.S. STRENGTH: LANUVIO

Low

High

Nominal

Estimated low strength 16,000

Estimated high strength 17,200

LFW Team's estimate 16,934
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0
                                           Total   16,934

BASIC SOURCES: 34th Inf Div and VI Corps Daily Situation
Reports.

CONCEPTS ANALYSIS AGENCY

US ARMY

U.S. CASUALTIES: LANUVIO

"Bloody"

Low	
Estimated casualties	1,458
High	
Estimated casualties	1,782
Nominal	
Estimated Casualties	1,620

"Non-Bloody"

Low	
Casualties	139
High	
Casualties	169
Nominal	
Casualties	154*

BASIC SOURCES: VI Corps Daily Situation Reports and *Lada, Medical Statistics World War II, p. 27.

CAA
CONCEPTS ANALYSIS AGENCY

III-76

US ARMY

GERMAN STRENGTH: LANUVIO

Low

Estimated low strength 6,500

High

Estimated high strength 7,300

Nominal

LFW Team's estimate 7,000
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0
                                              ─────
                                   Total   7,000

BASIC SOURCES: Fourteenth Army War Diary and appendices.

III-77

GERMAN CASUALTIES: LANUVIO

"Bloody"

Low

Estimated casualties 800

High

Estimated casualties 992

Nominal

Estimated Casualties 825

"Non-Bloody"

Low

Casualties 54

High

Casualties 66

Nominal

Casualties 60*

BASIC SOURCES: Fourteenth Army War Diary and appendices, and
*Mellor, Casualties and Medical Statistics, p. 241.

CAA — CONCEPTS ANALYSIS AGENCY

LANUVIO

HERO

A/D	Strength Pers (Total)	Armor T	Lt.	MBT	Arty Pcs	Air Sorties	Battle Casualties Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	17,300	0	0	0	94	371	825	1.2	?	--	?	--	?	--
D	6,108	46	0	46	61	31	698	2.9	?	--	?	--	?	--

LFW

A/D	Strength Pers (Total)	Armor T	Lt.	MBT	Arty Pcs	Air Sorties	Battle Casualties Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
A	16,934	108	34	74	94	?	1,520	2.4	?	--	?	--	?	--
D	7,000	?	?	?	24	?	825	2.9	?	--	?	--	?	--

CONCEPTS ANALYSIS AGENCY

III-79

US ARMY

U.S. STRENGTH: VIA ANZIATE

Low

Estimated low strength 15,500

High

Estimated high strength 17,200

Nominal

LFW Team's estimate 16,400
Replacements received during battle   0
RTD   0
Attachments/Detachments during battle   0
                                                _____
                              Total   16,400

BASIC SOURCES: VI Corps Daily Situation Reports.

US ARMY

U.S. CASUALTIES: VIA ANZIATE

"Bloody"

Low

Estimated casualties 500

High

Estimated casualties 1,100

Nominal

Estimated Casualties 800

"Non-Bloody"

Low

Casualties 67

High

Casualties 81

Nominal

Casualties 74*

BASIC SOURCES: VI Corps Daily Situation Reports, and *Lada, Medical Statistics World War II, p. 27.

CONCEPTS ANALYSIS AGENCY

US ARMY

GERMAN STRENGTH: VIA ANZIATE

Low

Estimated low strength 7,500

High

Estimated high strength 8,500

Nominal

LFW Team's estimate 8,000
Replacements received during battle 0
RTD 0
Attachments/Detachments during battle 0
                                          Total   8,000

BASIC SOURCES: Fourteenth Army War Diary and appendices.

CAA
CONCEPTS ANALYSIS AGENCY

IJJ-82

US ARMY

GERMAN CASUALTIES: VIA ANZIATE

"Bloody"

Low

Estimated casualties 700

High

Estimated casualties 1,400

Nominal

Estimated Casualties 800

"Non-Bloody"

Low

Casualties 31

High

Casualties 37

Nominal

Casualties 34*

BASIC SOURCES: Fourteenth Army War Diary and appendices and
*Mellor, Casualties and Medical Statistics, p. 241.

CONCEPTS ANALYSIS AGENCY

III-83

US ARMY

VIA ANZIATE

HERO

A/D	Strength				Air Sorties	Battle Casualties							
	Pers (Total)	Armor				Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT	Arty Pcs								
A	23,604	156	17	139	121	38	316	0.7	8	2.6	0	--	?	--
D	19,255	35	0	35	202	2	884	2.3	12	17.1	?	--	?	--

LFW

A/D	Strength				Air Sorties	Battle Casualties							
	Pers (Total)	Armor				Pers	%/D	Armor	%/D	Arty	%/D	A/C	%/D
		T	Lt.	MBT	Arty Pcs								
A	16,400	108	34	74	86	?	750	2.3	?	--	?	--	?	--
D	8,000	16	16	0	36	?	800	5.0	?	--	?	--	?	--

CAA
CONCEPTS ANALYSIS AGENCY

IIT-84